

SEQUENCE LISTING

<110> W. James Jackson

<120> CHLAMYDIA PROTEIN, GENE SEQUENCE AND USES THEREOF

<130> 7969-087

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<170> FastSEQ for Windows Version 3.0

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<212> DNA

<213> Chlamydia sp

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Leu	Ala	Arg	Glu	Val	Pro	Ser	Arg	Ile	Phe	Leu	Met	Pro	Asn	Ser	Val	
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cca	gat	cct	acg	aaa	gag	tcg	cta	tca	aat	aaa	att	agt	ttg	aca	gga	144
Pro	Asp	Pro	Thr	Lys	Glu	Ser	Leu	Ser	Asn	Lys	Ile	Ser	Leu	Thr	Gly	
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aca	gat	tac	cta	agc	ttt	ttt	gat	aca	caa	aaa	gaa	ggt	att	tat	ttt	288
Thr	Asp	Tyr	Leu	Ser	Phe	Phe	Asp	Thr	Gln	Lys	Glu	Gly	Ile	Tyr	Phe	
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gca	aaa	aat	ctc	acc	cct	gaa	agt	ggt	ggt	gcg	att	ggt	tat	gcg	agt	336
Ala	Lys	Asn	Leu	Thr	Pro	Glu	Ser	Gly	Gly	Ala	Ile	Gly	Tyr	Ala	Ser	
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Pro	Asn	Ser	Pro	Thr	Val	Glu	Ile	Arg	Asp	Thr	Ile	Gly	Pro	Val	Ile	
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Phe	Glu	Asn	Asn	Thr	Cys	Cys	Arg	Pro	Phe	Thr	Ser	Ser	Asn	Pro	Asn	
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Leu Tyr Ile Asn His Asn His Asp Val Val Gly Phe Met Lys Asn Phe	
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tct tat gtc cga gga gga gcc att agt acc gct aat acc ttt gtt gtg	576
Ser Tyr Val Arg Gly Gly Ala Ile Ser Thr Ala Asn Thr Phe Val Val	
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agc gag aat cag tct tgt ttt ctc ttt atg gac aac atc tgt att caa	624
Ser Glu Asn Gln Ser Cys Phe Leu Phe Met Asp Asn Ile Cys Ile Gln	
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act aat aca gca gga aaa ggt ggc gct atc tat gct gga acg agc aat	672
Thr Asn Thr Ala Gly Lys Gly Gly Ala Ile Tyr Ala Gly Thr Ser Asn	
210 215 220	
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Ser Phe Glu Ser Asn Asn Cys Asp Leu Phe Phe Ile Asn Asn Ala Cys	
225 230 235 240	
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Cys Ala Gly Gly Ala Ile Phe Ser Pro Ile Cys Ser Leu Thr Gly Asn	
245 250 255	
cgt ggt aac atc gtt ttc tat aac aat cgc tgc ttt aaa aat gta gaa	816
Arg Gly Asn Ile Val Phe Tyr Asn Asn Arg Cys Phe Lys Asn Val Glu	
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aca gct tct tca gaa gct tct gat gga gga gca att aaa gta act act	864
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Arg Leu Asp Val Thr Gly Asn Arg Gly Arg Ile Phe Phe Ser Asp Asn	
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Val Asp Asn Gly Pro Thr Tyr Phe Ile Asn Asn Ile Ala Asn Asn Lys	
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Gly Gly Ala Ile Tyr Ile Asp Gly Thr Ser Asn Ser Lys Ile Ser Ala	
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Asp Arg His Ala Ile Ile Phe Asn Glu Asn Ile Val Thr Asn Val Thr	
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Asn Ala Asn Gly Thr Ser Thr Ser Ala Asn Pro Pro Arg Arg Asn Ala	
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Ile Thr Val Ala Ser Ser Ser Gly Glu Ile Leu Leu Gly Ala Gly Ser	
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Ser Gln Asn Leu Ile Phe Tyr Asp Pro Ile Glu Val Ser Asn Ala Gly	
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Val Ser Val Ser Phe Asn Lys Glu Ala Asp Gln Thr Gly Ser Val Val	
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Phe Ser Gly Ala Thr Val Asn Ser Ala Asp Phe His Gln Arg Asn Leu	
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Gly Leu Asn Leu Ser Ser Ile Leu Lys Ser Gly Ala Glu Ile Pro Leu	
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Leu Trp Val Glu Pro Thr Asn Asn Ser Asn Asn Tyr Thr Ala Asp Thr	
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Tyr Gly Asn Ser Pro Tyr Glu Ser Thr Asp Leu Thr His Ala Leu Ser	
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Gln Gly Leu Trp Thr Trp Gly Trp Ala Lys Thr Gln Asp Pro Glu Pro	
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Ala Ser Ser Ala Thr Ile Thr Asp Pro Gln Lys Ala Asn Arg Phe His	
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Arg Thr Leu Leu Leu Thr Trp Leu Pro Ala Gly Tyr Val Pro Ser Pro	
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Leu Ala Thr Glu Ser Leu Lys Asn Ser Ala Glu Leu Thr Pro Ser Asp	
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Val Ser Ser Lys Asn Tyr Ser Cys Gln Gly Glu Met Leu Phe Ser Leu	
755 760 765	
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Gln Glu Gly Phe Leu Leu Thr Lys Leu Val Gly Leu Tyr Ser Tyr Gly	
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gac cat aac tgt cac cat ttc tat acc caa gga gaa aat cta aca tct	2400
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Gln Gly Thr Phe Arg Ser Gln Thr Met Gly Gly Ala Val Phe Phe Asp	
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Leu Gly Ala Leu Gly Ile Tyr Ser Ser Leu Ser His Phe Thr Glu Val	
835 840 845	
gga gcc tat ccg cga agc ttt tct aca aag act cct ttg atc aat gtc	2592
Gly Ala Tyr Pro Arg Ser Phe Ser Thr Lys Thr Pro Leu Ile Asn Val	
850 855 860	
cta gtc cct att gga gtt aaa ggt agc ttt atg aat gct acc caa aga	2640
Leu Val Pro Ile Gly Val Lys Gly Ser Phe Met Asn Ala Thr Gln Arg	
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cct caa gcc tgg act gta gaa ttg gca tac caa ccc gtt ctg tat aga	2688
Pro Gln Ala Trp Thr Val Glu Leu Ala Tyr Gln Pro Val Leu Tyr Arg	
885 890 895	
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Gln Glu Pro Gly Ile Ala Thr Gln Leu Leu Ala Ser Lys Gly Ile Trp	
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Phe Gly Ser Gly Ser Pro Ser Ser Arg His Ala Met Ser Tyr Lys Ile	
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cat gga ttc tac tcc tct tca acc ttc tgt aat tat ctc aat ggg gaa	2880
His Gly Phe Tyr Ser Ser Ser Thr Phe Cys Asn Tyr Leu Asn Gly Glu	
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Ile Ala Leu Arg Phe	
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Arg	Leu	Asp	Val	Thr	Gly	Asn	Arg	Gly	Arg	Ile	Phe	Phe	Ser	Asp	Asn
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Val	Asp	Asn	Gly	Pro	Thr	Tyr	Phe	Ile	Asn	Asn	Ile	Ala	Asn	Asn	Lys
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Gly	Gly	Ala	Ile	Tyr	Ile	Asp	Gly	Thr	Ser	Asn	Ser	Lys	Ile	Ser	Ala
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Val	Ser	Val	Ser	Phe	Asn	Lys	Glu	Ala	Asp	Gln	Thr	Gly	Ser	Val	Val
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Phe	Ser	Gly	Ala	Thr	Val	Asn	Ser	Ala	Asp	Phe	His	Gln	Arg	Asn	Leu
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Gln	Thr	Lys	Thr	Pro	Ala	Pro	Leu	Thr	Leu	Ser	Asn	Gly	Phe	Leu	Cys
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		500					505						510		
Gly	Leu	Asn	Leu	Ser	Ser	Ile	Leu	Lys	Ser	Gly	Ala	Glu	Ile	Pro	Leu
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Leu	Trp	Val	Glu	Pro	Thr	Asn	Asn	Ser	Asn	Asn	Tyr	Thr	Ala	Asp	Thr
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Tyr	Ser	Ala	Gly	Met	Ile	Ala	Gly	Gln	Thr	His	Thr	Phe	Ser	Leu	Lys
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Phe	Ser	Gln	Thr	Tyr	Thr	Lys	Leu	Asn	Glu	Arg	Tyr	Ala	Lys	Asn	Asn
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Gln	Glu	Gly	Phe	Leu	Leu	Thr	Lys	Leu	Val	Gly	Leu	Tyr	Ser	Tyr	Gly
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785					790					795					800
Gln	Gly	Thr	Phe	Arg	Ser	Gln	Thr	Met	Gly	Gly	Ala	Val	Phe	Phe	Asp
				805					810					815	
Leu	Pro	Met	Lys	Pro	Phe	Gly	Ser	Thr	His	Ile	Leu	Thr	Ala	Pro	Phe
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865					870					875					880
Pro	Gln	Ala	Trp	Thr	Val	Glu	Leu	Ala	Tyr	Gln	Pro	Val	Leu	Tyr	Arg
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Ser	Ser	Thr	Ala	Val	Leu	Phe	Gly	Gln	Asp	Pro	Leu	Gly	Glu	Thr	Ala	
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ctc	ctc	act	aaa	aat	cct	aat	cat	gtc	gtc	tgt	aca	ttt	ttt	gag	gac	144
Leu	Leu	Thr	Lys	Asn	Pro	Asn	His	Val	Val	Cys	Thr	Phe	Phe	Glu	Asp	
		35					40					45				
tgt	acc	atg	gag	agc	ctc	ttt	cct	gct	ctt	tgt	gct	cat	gca	tca	caa	192
Cys	Thr	Met	Glu	Ser	Leu	Phe	Pro	Ala	Leu	Cys	Ala	His	Ala	Ser	Gln	
	50					55				60						
gac	gat	cct	ttg	tat	gta	ctt	gga	aat	tcc	tac	tgt	tgg	ttc	gta	tct	240
Asp	Asp	Pro	Leu	Tyr	Val	Leu	Gly	Asn	Ser	Tyr	Cys	Trp	Phe	Val	Ser	
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aaa	ctc	cat	atc	acg	gac	ccc	aaa	gag	gct	ctt	ttt	aaa	gaa	aaa	gga	288
Lys	Leu	His	Ile	Thr	Asp	Pro	Lys	Glu	Ala	Leu	Phe	Lys	Glu	Lys	Gly	
			85					90					95			
gat	ctt	tcc	att	caa	aac	ttt	cgc	ttc	ctt	tcc	ttc	aca	gat	tgc	tct	336
Asp	Leu	Ser	Ile	Gln	Asn	Phe	Arg	Phe	Leu	Ser	Phe	Thr	Asp	Cys	Ser	
			100				105						110			
tcc	aag	gaa	agc	tct	cct	tct	att	att	cat	caa	aag	aat	ggt	cag	tta	384
Ser	Lys	Glu	Ser	Ser	Pro	Ser	Ile	Ile	His	Gln	Lys	Asn	Gly	Gln	Leu	
		115					120					125				
tcc	ttg	cgc	aat	aat	ggt	agc	atg	agt	ttc	tgt	cga	aat	cat	gct	gaa	432
Ser	Leu	Arg	Asn	Asn	Gly	Ser	Met	Ser	Phe	Cys	Arg	Asn	His	Ala	Glu	
	130					135					140					
ggc	tct	gga	gga	gcc	atc	tct	gcg	gat	gcc	ttt	tct	cta	cag	cac	aac	480
Gly	Ser	Gly	Gly	Ala	Ile	Ser	Ala	Asp	Ala	Phe	Ser	Leu	Gln	His	Asn	
145				150				155							160	
tat	ctt	ttc	aca	gct	ttt	gaa	gag	aat	tct	tct	aaa	gga	aat	ggc	gga	528
Tyr	Leu	Phe	Thr	Ala	Phe	Glu	Glu	Asn	Ser	Ser	Lys	Gly	Asn	Gly	Gly	
			165					170						175		
gcc	att	cag	gct	caa	acc	ttc	tct	tta	tct	aga	aat	gtg	tcg	cct	att	576
Ala	Ile	Gln	Ala	Gln	Thr	Phe	Ser	Leu	Ser	Arg	Asn	Val	Ser	Pro	Ile	
			180					185					190			
tct	ttc	gcc	cgt	aat	cgt	gcg	gat	tta	aat	ggc	ggc	gct	att	tgc	tgt	624
Ser	Phe	Ala	Arg	Asn	Arg	Ala	Asp	Leu	Asn	Gly	Gly	Ala	Ile	Cys	Cys	
		195				200						205				

agt aat ctt att tgt tca ggg aat gta aac cct ctc ttt ttc act gga	672
Ser Asn Leu Ile Cys Ser Gly Asn Val Asn Pro Leu Phe Phe Thr Gly	
210 215 220	
aac tcc gcc acg aat gga ggc gct att tgt tgt atc agc gat cta aac	720
Asn Ser Ala Thr Asn Gly Gly Ala Ile Cys Cys Ile Ser Asp Leu Asn	
225 230 235 240	
acc tca gaa aaa ggc tct ctc tct ctt gct tgt aac caa gaa acg cta	768
Thr Ser Glu Lys Gly Ser Leu Ser Leu Ala Cys Asn Gln Glu Thr Leu	
245 250 255	
ttt gca agc aat tct gct aaa gaa aaa ggc ggg gct att tat gcc aag	816
Phe Ala Ser Asn Ser Ala Lys Glu Lys Gly Gly Ala Ile Tyr Ala Lys	
260 265 270	
cac atg gta ttg cgt tat aac ggt cct gtt tcc ttc att aac aac agc	864
His Met Val Leu Arg Tyr Asn Gly Pro Val Ser Phe Ile Asn Asn Ser	
275 280 285	
gct aaa ata ggt gga gct atc gcc atc cag tcc gga ggg agt ctc tct	912
Ala Lys Ile Gly Gly Ala Ile Ala Ile Gln Ser Gly Gly Ser Leu Ser	
290 295 300	
atc ctt gca ggt gaa gga tct gtt ctg ttc cag aat aac tcc caa cgc	960
Ile Leu Ala Gly Glu Gly Ser Val Leu Phe Gln Asn Asn Ser Gln Arg	
305 310 315 320	
acc tcc gac caa ggt cta gta aga aac gcc atc tac tta gag aaa gat	1008
Thr Ser Asp Gln Gly Leu Val Arg Asn Ala Ile Tyr Leu Glu Lys Asp	
325 330 335	
gcg att ctt tct tcc tta gaa gct cgc aac gga gat att ctt ttc ttt	1056
Ala Ile Leu Ser Ser Leu Glu Ala Arg Asn Gly Asp Ile Leu Phe Phe	
340 345 350	
gat cct att gta caa gaa agt agc agc aaa gaa tcg cct ctt ccc tcc	1104
Asp Pro Ile Val Gln Glu Ser Ser Ser Lys Glu Ser Pro Leu Pro Ser	
355 360 365	
tct ttg caa gcc agc gtg act tct ccc acc cca gcc acc gca tct cct	1152
Ser Leu Gln Ala Ser Val Thr Ser Pro Thr Pro Ala Thr Ala Ser Pro	
370 375 380	
tta gtt att cag aca agt gca aac cgt tca gtg att ttc tcg agc gaa	1200
Leu Val Ile Gln Thr Ser Ala Asn Arg Ser Val Ile Phe Ser Ser Glu	
385 390 395 400	
cgt ctt tct gaa gaa gaa aaa act cct gat aac ctc act tcc caa cta	1248
Arg Leu Ser Glu Glu Glu Lys Thr Pro Asp Asn Leu Thr Ser Gln Leu	
405 410 415	
cag cag cct atc gaa ctg aaa tcc gga cgc tta gtt tta aaa gat cgc	1296
Gln Gln Pro Ile Glu Leu Lys Ser Gly Arg Leu Val Leu Lys Asp Arg	
420 425 430	

gct gtc ctt tcc gcg cct tct ctc tct cag gat cct caa gct ctc ctc	1344
Ala Val Leu Ser Ala Pro Ser Leu Ser Gln Asp Pro Gln Ala Leu Leu	
435 440 445	
att atg gaa gcg gga act tct tta aaa act tcc tct gat ttg aag tta	1392
Ile Met Glu Ala Gly Thr Ser Leu Lys Thr Ser Ser Asp Leu Lys Leu	
450 455 460	
gct acg cta agt att ccc ctt cat tcc tta gat act gaa aaa agc gta	1440
Ala Thr Leu Ser Ile Pro Leu His Ser Leu Asp Thr Glu Lys Ser Val	
465 470 475 480	
act atc cac gcc cct aac ctt tct atc caa aag atc ttc ctc tct aat	1488
Thr Ile His Ala Pro Asn Leu Ser Ile Gln Lys Ile Phe Leu Ser Asn	
485 490 495	
tct gga gat gag aat ttt tat gaa aat gta gag ctt ctc agt aaa gag	1536
Ser Gly Asp Glu Asn Phe Tyr Glu Asn Val Glu Leu Leu Ser Lys Glu	
500 505 510	
caa aac aat att cct ctc ctt act ctc tct aaa gag caa tct cat tta	1584
Gln Asn Asn Ile Pro Leu Leu Thr Leu Ser Lys Glu Gln Ser His Leu	
515 520 525	
cat ctt cct gat ggg aac ctc tct tct cac ttt gga tat caa gga gat	1632
His Leu Pro Asp Gly Asn Leu Ser Ser His Phe Gly Tyr Gln Gly Asp	
530 535 540	
tgg act ttt tct tgg aaa gat tct gat gaa ggg cat tct ctg att gct	1680
Trp Thr Phe Ser Trp Lys Asp Ser Asp Glu Gly His Ser Leu Ile Ala	
545 550 555 560	
aat tgg acg cct aaa aac tat gtg cct cat cca gaa cgt caa tct aca	1728
Asn Trp Thr Pro Lys Asn Tyr Val Pro His Pro Glu Arg Gln Ser Thr	
565 570 575	
ctc gtt gcg aac act ctt tgg aac acc tat tcc gat atg caa gct gtg	1776
Leu Val Ala Asn Thr Leu Trp Asn Thr Tyr Ser Asp Met Gln Ala Val	
580 585 590	
cag tcg atg att aat aca ata gcg cac gga gga gcc tat cta ttt gga	1824
Gln Ser Met Ile Asn Thr Ile Ala His Gly Gly Ala Tyr Leu Phe Gly	
595 600 605	
acg tgg gga tct gct gtt tct aat tta ttc tat gct cac gac agc tct	1872
Thr Trp Gly Ser Ala Val Ser Asn Leu Phe Tyr Ala His Asp Ser Ser	
610 615 620	
ggg aaa cct atc gat aat tgg cat cat aga agc ctt ggc tac cta ttc	1920
Gly Lys Pro Ile Asp Asn Trp His His Arg Ser Leu Gly Tyr Leu Phe	
625 630 635 640	
ggg atc agt act cac agt tta gat gac cat tct ttc tgc ttg gct gca	1968
Gly Ile Ser Thr His Ser Leu Asp Asp His Ser Phe Cys Leu Ala Ala	
645 650 655	

gga caa tta ctc ggg aaa tcg tcc gat tcc ttt att acg tct aca gaa Gly Gln Leu Leu Gly Lys Ser Ser Asp Ser Phe Ile Thr Ser Thr Glu 660 665 670	2016
acg acc tcc tat ata gct act gta caa gcg caa ctc gct acc tct cta Thr Thr Ser Tyr Ile Ala Thr Val Gln Ala Gln Leu Ala Thr Ser Leu 675 680 685	2064
atg aaa atc tct gca cag gca tgc tac aat gaa agt atc cat gag cta Met Lys Ile Ser Ala Gln Ala Cys Tyr Asn Glu Ser Ile His Glu Leu 690 695 700	2112
aaa aca aaa tat cgc tcc ttc tct aaa gaa gga ttc gga tcc tgg cat Lys Thr Lys Tyr Arg Ser Phe Ser Lys Glu Gly Phe Gly Ser Trp His 705 710 715 720	2160
agc gtt gca gta tcc gga gaa gtg tgc gca tcg att cct att gta tcc Ser Val Ala Val Ser Gly Glu Val Cys Ala Ser Ile Pro Ile Val Ser 725 730 735	2208
aat ggt tcc gga ctg ttc agc tcc ttc tct att ttc tct aaa ctg caa Asn Gly Ser Gly Leu Phe Ser Ser Phe Ser Ile Phe Ser Lys Leu Gln 740 745 750	2256
gga ttt tca gga aca cag gac ggt ttt gag gag agt tcg gga gag att Gly Phe Ser Gly Thr Gln Asp Gly Phe Glu Glu Ser Ser Gly Glu Ile 755 760 765	2304
cgg tcc ttt tct gcc agc tct ttc aga aat att tca ctt cct ata gga Arg Ser Phe Ser Ala Ser Ser Phe Arg Asn Ile Ser Leu Pro Ile Gly 770 775 780	2352
ata aca ttt gaa aaa aaa tcc caa aaa aca cga acc tac tat tac ttt Ile Thr Phe Glu Lys Lys Ser Gln Lys Thr Arg Thr Tyr Tyr Tyr Phe 785 790 795 800	2400
cta gga gcc tac atc caa gac ctg aaa cgt gat gtg gaa tcg gga cct Leu Gly Ala Tyr Ile Gln Asp Leu Lys Arg Asp Val Glu Ser Gly Pro 805 810 815	2448
gta gtg tta ctc aaa aat gcc gtc tcc tgg gat gct cct atg gcg aac Val Val Leu Leu Lys Asn Ala Val Ser Trp Asp Ala Pro Met Ala Asn 820 825 830	2496
ttg gat tca cga gcc tac atg ttc agg ctt acg aat caa aga gct cta Leu Asp Ser Arg Ala Tyr Met Phe Arg Leu Thr Asn Gln Arg Ala Leu 835 840 845	2544
cac aga ctt cag acg ctg tta aat gtg tct tgt gtg ctg cgt ggg caa His Arg Leu Gln Thr Leu Leu Asn Val Ser Cys Val Leu Arg Gly Gln 850 855 860	2592
agc cat agt tac tcc ctg gat ctg ggg acc act tac agg ttc Ser His Ser Tyr Ser Leu Asp Leu Gly Thr Thr Tyr Arg Phe 865 870 875	2634
tag	2637

<210> 4
 <211> 878
 <212> PRT
 <213> Chlamydia sp

<400> 4

Met	Arg	Pro	Asp	His	Met	Asn	Phe	Cys	Cys	Leu	Cys	Ala	Ala	Ile	Leu
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Ser	Ser	Thr	Ala	Val	Leu	Phe	Gly	Gln	Asp	Pro	Leu	Gly	Glu	Thr	Ala
			20					25					30		
Leu	Leu	Thr	Lys	Asn	Pro	Asn	His	Val	Val	Cys	Thr	Phe	Phe	Glu	Asp
		35				40						45			
Cys	Thr	Met	Glu	Ser	Leu	Phe	Pro	Ala	Leu	Cys	Ala	His	Ala	Ser	Gln
	50				55					60					
Asp	Asp	Pro	Leu	Tyr	Val	Leu	Gly	Asn	Ser	Tyr	Cys	Trp	Phe	Val	Ser
65				70						75				80	
Lys	Leu	His	Ile	Thr	Asp	Pro	Lys	Glu	Ala	Leu	Phe	Lys	Glu	Lys	Gly
			85					90						95	
Asp	Leu	Ser	Ile	Gln	Asn	Phe	Arg	Phe	Leu	Ser	Phe	Thr	Asp	Cys	Ser
			100					105						110	
Ser	Lys	Glu	Ser	Ser	Pro	Ser	Ile	Ile	His	Gln	Lys	Asn	Gly	Gln	Leu
		115					120						125		
Ser	Leu	Arg	Asn	Asn	Gly	Ser	Met	Ser	Phe	Cys	Arg	Asn	His	Ala	Glu
	130					135					140				
Gly	Ser	Gly	Gly	Ala	Ile	Ser	Ala	Asp	Ala	Phe	Ser	Leu	Gln	His	Asn
145				150						155				160	
Tyr	Leu	Phe	Thr	Ala	Phe	Glu	Glu	Asn	Ser	Ser	Lys	Gly	Asn	Gly	Gly
			165					170						175	
Ala	Ile	Gln	Ala	Gln	Thr	Phe	Ser	Leu	Ser	Arg	Asn	Val	Ser	Pro	Ile
			180					185						190	
Ser	Phe	Ala	Arg	Asn	Arg	Ala	Asp	Leu	Asn	Gly	Gly	Ala	Ile	Cys	Cys
	195						200					205			
Ser	Asn	Leu	Ile	Cys	Ser	Gly	Asn	Val	Asn	Pro	Leu	Phe	Phe	Thr	Gly
	210					215					220				
Asn	Ser	Ala	Thr	Asn	Gly	Gly	Ala	Ile	Cys	Cys	Ile	Ser	Asp	Leu	Asn
225				230						235				240	
Thr	Ser	Glu	Lys	Gly	Ser	Leu	Ser	Leu	Ala	Cys	Asn	Gln	Glu	Thr	Leu
			245						250					255	
Phe	Ala	Ser	Asn	Ser	Ala	Lys	Glu	Lys	Gly	Gly	Ala	Ile	Tyr	Ala	Lys
			260					265						270	
His	Met	Val	Leu	Arg	Tyr	Asn	Gly	Pro	Val	Ser	Phe	Ile	Asn	Asn	Ser
	275						280						285		
Ala	Lys	Ile	Gly	Gly	Ala	Ile	Ala	Ile	Gln	Ser	Gly	Gly	Ser	Leu	Ser
	290					295					300				
Ile	Leu	Ala	Gly	Glu	Gly	Ser	Val	Leu	Phe	Gln	Asn	Asn	Ser	Gln	Arg
305				310						315				320	
Thr	Ser	Asp	Gln	Gly	Leu	Val	Arg	Asn	Ala	Ile	Tyr	Leu	Glu	Lys	Asp
			325						330					335	
Ala	Ile	Leu	Ser	Ser	Leu	Glu	Ala	Arg	Asn	Gly	Asp	Ile	Leu	Phe	Phe
			340					345					350		
Asp	Pro	Ile	Val	Gln	Glu	Ser	Ser	Ser	Lys	Glu	Ser	Pro	Leu	Pro	Ser
	355						360					365			
Ser	Leu	Gln	Ala	Ser	Val	Thr	Ser	Pro	Thr	Pro	Ala	Thr	Ala	Ser	Pro
	370					375					380				
Leu	Val	Ile	Gln	Thr	Ser	Ala	Asn	Arg	Ser	Val	Ile	Phe	Ser	Ser	Glu
385				390						395				400	
Arg	Leu	Ser	Glu	Glu	Glu	Lys	Thr	Pro	Asp	Asn	Leu	Thr	Ser	Gln	Leu
				405					410					415	

Gln Gln Pro Ile Glu Leu Lys Ser Gly Arg Leu Val Leu Lys Asp Arg
 420 425 430
 Ala Val Leu Ser Ala Pro Ser Leu Ser Gln Asp Pro Gln Ala Leu Leu
 435 440 445
 Ile Met Glu Ala Gly Thr Ser Leu Lys Thr Ser Ser Asp Leu Lys Leu
 450 455 460
 Ala Thr Leu Ser Ile Pro Leu His Ser Leu Asp Thr Glu Lys Ser Val
 465 470 475 480
 Thr Ile His Ala Pro Asn Leu Ser Ile Gln Lys Ile Phe Leu Ser Asn
 485 490 495
 Ser Gly Asp Glu Asn Phe Tyr Glu Asn Val Glu Leu Leu Ser Lys Glu
 500 505 510
 Gln Asn Asn Ile Pro Leu Leu Thr Leu Ser Lys Glu Gln Ser His Leu
 515 520 525
 His Leu Pro Asp Gly Asn Leu Ser Ser His Phe Gly Tyr Gln Gly Asp
 530 535 540
 Trp Thr Phe Ser Trp Lys Asp Ser Asp Glu Gly His Ser Leu Ile Ala
 545 550 555 560
 Asn Trp Thr Pro Lys Asn Tyr Val Pro His Pro Glu Arg Gln Ser Thr
 565 570 575
 Leu Val Ala Asn Thr Leu Trp Asn Thr Tyr Ser Asp Met Gln Ala Val
 580 585 590
 Gln Ser Met Ile Asn Thr Ile Ala His Gly Gly Ala Tyr Leu Phe Gly
 595 600 605
 Thr Trp Gly Ser Ala Val Ser Asn Leu Phe Tyr Ala His Asp Ser Ser
 610 615 620
 Gly Lys Pro Ile Asp Asn Trp His His Arg Ser Leu Gly Tyr Leu Phe
 625 630 635 640
 Gly Ile Ser Thr His Ser Leu Asp Asp His Ser Phe Cys Leu Ala Ala
 645 650 655
 Gly Gln Leu Leu Gly Lys Ser Ser Asp Ser Phe Ile Thr Ser Thr Glu
 660 665 670
 Thr Thr Ser Tyr Ile Ala Thr Val Gln Ala Gln Leu Ala Thr Ser Leu
 675 680 685
 Met Lys Ile Ser Ala Gln Ala Cys Tyr Asn Glu Ser Ile His Glu Leu
 690 695 700
 Lys Thr Lys Tyr Arg Ser Phe Ser Lys Glu Gly Phe Gly Ser Trp His
 705 710 715 720
 Ser Val Ala Val Ser Gly Glu Val Cys Ala Ser Ile Pro Ile Val Ser
 725 730 735
 Asn Gly Ser Gly Leu Phe Ser Ser Phe Ser Ile Phe Ser Lys Leu Gln
 740 745 750
 Gly Phe Ser Gly Thr Gln Asp Gly Phe Glu Glu Ser Ser Gly Glu Ile
 755 760 765
 Arg Ser Phe Ser Ala Ser Ser Phe Arg Asn Ile Ser Leu Pro Ile Gly
 770 775 780
 Ile Thr Phe Glu Lys Lys Ser Gln Lys Thr Arg Thr Tyr Tyr Tyr Phe
 785 790 795 800
 Leu Gly Ala Tyr Ile Gln Asp Leu Lys Arg Asp Val Glu Ser Gly Pro
 805 810 815
 Val Val Leu Leu Lys Asn Ala Val Ser Trp Asp Ala Pro Met Ala Asn
 820 825 830
 Leu Asp Ser Arg Ala Tyr Met Phe Arg Leu Thr Asn Gln Arg Ala Leu
 835 840 845
 His Arg Leu Gln Thr Leu Leu Asn Val Ser Cys Val Leu Arg Gly Gln
 850 855 860
 Ser His Ser Tyr Ser Leu Asp Leu Gly Thr Thr Tyr Arg Phe
 865 870 875

<210> 5
 <211> 42
 <212> PRT
 <213> Chlamydia sp

<400> 5
 Ser Gly Leu Ala Arg Glu Val Pro Ser Arg Ile Phe Leu Met Pro Asn
 1 5 10 15
 Ser Val Pro Asp Pro Thr Lys Glu Ser Leu Ser Asn Lys Ile Ser Leu
 20 25 30
 Thr Gly Asp Thr His Asn Leu Thr Asn Cys
 35 40

<210> 6
 <211> 107
 <212> PRT
 <213> Chlamydia sp

<400> 6
 Ser Gly Leu Ala Arg Glu Val Pro Ser Arg Ile Phe Leu Met Pro Asn
 1 5 10 15
 Ser Val Pro Asp Pro Thr Lys Glu Ser Leu Ser Asn Lys Ile Ser Leu
 20 25 30
 Thr Gly Asp Thr His Asn Leu Thr Asn Cys Tyr Leu Asp Asn Leu Arg
 35 40 45
 Tyr Ile Leu Ala Ile Leu Gln Lys Thr Pro Asn Glu Gly Ala Ala Val
 50 55 60
 Thr Ile Thr Asp Tyr Leu Ser Phe Phe Asp Thr Gln Lys Glu Gly Ile
 65 70 75 80
 Tyr Phe Ala Lys Asn Leu Thr Pro Glu Ser Gly Gly Ala Ile Gly Tyr
 85 90 95
 Ala Ser Pro Asn Ser Pro Thr Val Glu Ile Arg
 100 105

<210> 7
 <211> 81
 <212> PRT
 <213> Chlamydia sp

<400> 7
 Ser Leu Thr Gly Asp Thr His Asn Leu Thr Asn Cys Tyr Leu Asp Asn
 1 5 10 15
 Leu Arg Tyr Ile Leu Ala Ile Leu Gln Lys Thr Pro Asn Glu Gly Ala
 20 25 30
 Ala Val Thr Ile Thr Asp Tyr Leu Ser Phe Phe Asp Thr Gln Lys Glu
 35 40 45
 Gly Ile Tyr Phe Ala Lys Asn Leu Thr Pro Glu Ser Gly Gly Ala Ile
 50 55 60
 Gly Tyr Ala Ser Pro Asn Ser Pro Thr Val Glu Ile Arg Asp Thr Ile
 65 70 75 80
 Gly

<210> 8
 <211> 66
 <212> PRT
 <213> Chlamydia sp

<400> 8
 Gly Pro Val Ile Phe Glu Asn Asn Thr Cys Cys Arg Pro Phe Thr Ser
 1 5 10 15
 Ser Asn Pro Asn Ala Ala Val Asn Lys Ile Arg Glu Gly Gly Ala Ile
 20 25 30
 His Ala Gln Asn Leu Tyr Ile Asn His Asn His Asp Val Val Gly Phe
 35 40 45
 Met Lys Asn Phe Ser Tyr Val Arg Gly Gly Ala Ile Ser Thr Ala Asn
 50 55 60
 Thr Phe
 65

<210> 9
 <211> 67
 <212> PRT
 <213> Chlamydia sp

<400> 9
 Asn Gln Ser Cys Phe Leu Phe Met Asp Asn Ile Cys Ile Gln Thr Asn
 1 5 10 15
 Thr Ala Gly Lys Gly Gly Ala Ile Tyr Ala Gly Thr Ser Asn Ser Phe
 20 25 30
 Glu Ser Asn Asn Cys Asp Leu Phe Ile Asn Asn Ala Cys Cys Ala
 35 40 45
 Gly Gly Ala Ile Phe Ser Pro Ile Cys Ser Leu Thr Gly Asn Arg Gly
 50 55 60
 Asn Ile Val
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<210> 10
 <211> 92
 <212> PRT
 <213> Chlamydia sp

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 Ser Ser Glu Ala Ser Asp Gly Gly Ala Ile Lys Val Thr Thr Arg Leu
 1 5 10 15
 Asp Val Thr Gly Asn Arg Gly Arg Ile Phe Phe Ser Asp Asn Ile Thr
 20 25 30
 Lys Asn Tyr Gly Gly Ala Ile Tyr Ala Pro Val Val Thr Leu Val Asp
 35 40 45
 Asn Gly Pro Thr Tyr Phe Ile Asn Asn Ile Ala Asn Asn Lys Gly Gly
 50 55 60
 Ala Ile Tyr Ile Asp Gly Thr Ser Asn Ser Lys Ile Ser Ala Asp Arg
 65 70 75 80
 His Ala Ile Ile Phe Asn Glu Asn Ile Val Thr Asn
 85 90

<210> 11
 <211> 66
 <212> PRT
 <213> Chlamydia sp

<400> 11
 Thr Ser Ala Asn Pro Pro Arg Arg Asn Ala Ile Thr Val Ala Ser Ser
 1 5 10 15
 Ser Gly Glu Ile Leu Leu Gly Ala Gly Ser Ser Gln Asn Leu Ile Phe
 20 25 30

Tyr Asp Pro Ile Glu Val Ser Asn Ala Gly Val Ser Val Ser Phe Asn
 35 40 45
 Lys Glu Ala Asp Gln Thr Gly Ser Val Val Phe Ser Gly Ala Thr Val
 50 55 60
 Asn Ser
 65

<210> 12
 <211> 51
 <212> PRT
 <213> Chlamydia sp

<400> 12
 Ser Ala Asp Phe His Gln Arg Asn Leu Gln Thr Lys Thr Pro Ala Pro
 1 5 10 15
 Leu Thr Leu Ser Asn Gly Phe Leu Cys Ile Glu Asp His Ala Gln Leu
 20 25 30
 Thr Val Asn Arg Phe Thr Gln Thr Gly Gly Val Val Ser Leu Gly Asn
 35 40 45
 Gly Ala Val
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<210> 13
 <211> 66
 <212> PRT
 <213> Chlamydia sp

<400> 13
 Glu Ile Pro Leu Leu Trp Val Glu Pro Thr Asn Asn Ser Asn Asn Tyr
 1 5 10 15
 Thr Ala Asp Thr Ala Ala Thr Phe Ser Leu Ser Asp Val Lys Leu Ser
 20 25 30
 Leu Ile Asp Asp Tyr Gly Asn Ser Pro Tyr Glu Ser Thr Asp Leu Thr
 35 40 45
 His Ala Leu Ser Ser Gln Pro Met Leu Ser Ile Ser Glu Ala Ser Asp
 50 55 60
 Asn Gln
 65

<210> 14
 <211> 36
 <212> PRT
 <213> Chlamydia sp

<400> 14
 Gln Leu Arg Ser Asp Asp Met Asp Phe Ser Gly Leu Asn Val Pro His
 1 5 10 15
 Tyr Gly Trp Gln Gly Leu Trp Thr Trp Gly Trp Ala Lys Thr Gln Asp
 20 25 30
 Pro Glu Pro Ala
 35

<210> 15
 <211> 36
 <212> PRT
 <213> Chlamydia sp

<400> 15

Gly Trp Ala Lys Thr Gln Asp Pro Glu Pro Ala Ser Ser Ala Thr Ile
 1 5 10 15
 Thr Asp Pro Gln Lys Ala Asn Arg Phe His Arg Thr Leu Leu Thr
 20 25 30
 Trp Leu Pro Ala
 35

<210> 16
 <211> 76
 <212> PRT
 <213> Chlamydia sp

<400> 16
 Ala Ser Ser Ala Thr Ile Thr Asp Pro Gln Lys Ala Asn Arg Phe His
 1 5 10 15
 Arg Thr Leu Leu Leu Thr Trp Leu Pro Ala Gly Tyr Val Pro Ser Pro
 20 25 30
 Lys His Arg Ser Pro Leu Ile Ala Asn Thr Leu Trp Gly Asn Met Leu
 35 40 45
 Leu Ala Thr Glu Ser Leu Lys Asn Ser Ala Glu Leu Thr Pro Ser Asp
 50 55 60
 His Pro Phe Trp Gly Ile Thr Gly Gly Gly Leu Gly
 65 70 75

<210> 17
 <211> 76
 <212> PRT
 <213> Chlamydia sp

<400> 17
 Met Ile Ala Gly Gln Thr His Thr Phe Ser Leu Lys Phe Ser Gln Thr
 1 5 10 15
 Tyr Thr Lys Leu Asn Glu Arg Tyr Ala Lys Asn Asn Val Ser Ser Lys
 20 25 30
 Asn Tyr Ser Cys Gln Gly Glu Met Leu Phe Ser Leu Gln Glu Gly Phe
 35 40 45
 Leu Leu Thr Lys Leu Val Gly Leu Tyr Ser Tyr Gly Asp His Asn Cys
 50 55 60
 His His Phe Tyr Thr Gln Gly Glu Asn Leu Thr Ser
 65 70 75

<210> 18
 <211> 21
 <212> PRT
 <213> Chlamydia sp

<400> 18
 Ser Lys Asn Tyr Ser Cys Gln Gly Glu Met Leu Phe Ser Leu Gln Glu
 1 5 10 15
 Gly Phe Leu Leu Thr
 20

<210> 19
 <211> 61
 <212> PRT
 <213> Chlamydia sp

<400> 19

Asp His Asn Cys His His Phe Tyr Thr Gln Gly Glu Asn Leu Thr Ser
 1 5 10 15
 Gln Gly Thr Phe Arg Ser Gln Thr Met Gly Gly Ala Val Phe Phe Asp
 20 25 30
 Leu Pro Met Lys Pro Phe Gly Ser Thr His Ile Leu Thr Ala Pro Phe
 35 40 45
 Leu Gly Ala Leu Gly Ile Tyr Ser Ser Leu Ser His Phe
 50 55 60

<210> 20
 <211> 51
 <212> PRT
 <213> Chlamydia sp

<400> 20
 Phe Asp Leu Pro Met Lys Pro Phe Gly Ser Thr His Ile Leu Thr Ala
 1 5 10 15
 Pro Phe Leu Gly Ala Leu Gly Ile Tyr Ser Ser Leu Ser His Phe Thr
 20 25 30
 Glu Val Gly Ala Tyr Pro Arg Ser Phe Ser Thr Lys Thr Pro Leu Ile
 35 40 45
 Asn Val Leu
 50

<210> 21
 <211> 31
 <212> PRT
 <213> Chlamydia sp

<400> 21
 Met Lys Lys Ala Phe Phe Phe Phe Leu Ile Gly Asn Ser Leu Ser Gly
 1 5 10 15
 Leu Ala Arg Glu Val Pro Ser Arg Ile Phe Leu Met Pro Asn Ser
 20 25 30

<210> 22
 <211> 500
 <212> PRT
 <213> Chlamydia sp

<400> 22
 Met Lys Lys Ala Phe Phe Phe Phe Leu Ile Gly Asn Ser Leu Ser Gly
 1 5 10 15
 Leu Ala Arg Glu Val Pro Ser Arg Ile Phe Leu Met Pro Asn Ser Val
 20 25 30
 Pro Asp Pro Thr Lys Glu Ser Leu Ser Asn Lys Ile Ser Leu Thr Gly
 35 40 45
 Asp Thr His Asn Leu Thr Asn Cys Tyr Leu Asp Asn Leu Arg Tyr Ile
 50 55 60
 Leu Ala Ile Leu Gln Lys Thr Pro Asn Glu Gly Ala Ala Val Thr Ile
 65 70 75 80
 Thr Asp Tyr Leu Ser Phe Phe Asp Thr Gln Lys Glu Gly Ile Tyr Phe
 85 90 95
 Ala Lys Asn Leu Thr Pro Glu Ser Gly Gly Ala Ile Gly Tyr Ala Ser
 100 105 110
 Pro Asn Ser Pro Thr Val Glu Ile Arg Asp Thr Ile Gly Pro Val Ile
 115 120 125

Phe	Glu	Asn	Asn	Thr	Cys	Cys	Arg	Pro	Phe	Thr	Ser	Ser	Asn	Pro	Asn
130						135					140				
Ala	Ala	Val	Asn	Lys	Ile	Arg	Glu	Gly	Gly	Ala	Ile	His	Ala	Gln	Asn
145						150					155				160
Leu	Tyr	Ile	Asn	His	Asn	His	Asp	Val	Val	Gly	Phe	Met	Lys	Asn	Phe
				165						170					175
Ser	Tyr	Val	Arg	Gly	Gly	Ala	Ile	Ser	Thr	Ala	Asn	Thr	Phe	Val	Val
			180					185					190		
Ser	Glu	Asn	Gln	Ser	Cys	Phe	Leu	Phe	Met	Asp	Asn	Ile	Cys	Ile	Gln
		195					200					205			
Thr	Asn	Thr	Ala	Gly	Lys	Gly	Gly	Ala	Ile	Tyr	Ala	Gly	Thr	Ser	Asn
	210					215						220			
Ser	Phe	Glu	Ser	Asn	Asn	Cys	Asp	Leu	Phe	Phe	Ile	Asn	Asn	Ala	Cys
225					230					235					240
Cys	Ala	Gly	Gly	Ala	Ile	Phe	Ser	Pro	Ile	Cys	Ser	Leu	Thr	Gly	Asn
				245					250						255
Arg	Gly	Asn	Ile	Val	Phe	Tyr	Asn	Asn	Arg	Cys	Phe	Lys	Asn	Val	Glu
			260					265						270	
Thr	Ala	Ser	Ser	Glu	Ala	Ser	Asp	Gly	Gly	Ala	Ile	Lys	Val	Thr	Thr
		275					280						285		
Arg	Leu	Asp	Val	Thr	Gly	Asn	Arg	Gly	Arg	Ile	Phe	Phe	Ser	Asp	Asn
	290					295					300				
Ile	Thr	Lys	Asn	Tyr	Gly	Gly	Ala	Ile	Tyr	Ala	Pro	Val	Val	Thr	Leu
305					310					315					320
Val	Asp	Asn	Gly	Pro	Thr	Tyr	Phe	Ile	Asn	Asn	Ile	Ala	Asn	Asn	Lys
				325					330						335
Gly	Gly	Ala	Ile	Tyr	Ile	Asp	Gly	Thr	Ser	Asn	Ser	Lys	Ile	Ser	Ala
			340					345						350	
Asp	Arg	His	Ala	Ile	Ile	Phe	Asn	Glu	Asn	Ile	Val	Thr	Asn	Val	Thr
		355					360						365		
Asn	Ala	Asn	Gly	Thr	Ser	Thr	Ser	Ala	Asn	Pro	Pro	Arg	Arg	Asn	Ala
	370					375					380				
Ile	Thr	Val	Ala	Ser	Ser	Ser	Gly	Glu	Ile	Leu	Leu	Gly	Ala	Gly	Ser
385					390					395					400
Ser	Gln	Asn	Leu	Ile	Phe	Tyr	Asp	Pro	Ile	Glu	Val	Ser	Asn	Ala	Gly
				405					410					415	
Val	Ser	Val	Ser	Phe	Asn	Lys	Glu	Ala	Asp	Gln	Thr	Gly	Ser	Val	Val
			420					425						430	
Phe	Ser	Gly	Ala	Thr	Val	Asn	Ser	Ala	Asp	Phe	His	Gln	Arg	Asn	Leu
		435					440						445		
Gln	Thr	Lys	Thr	Pro	Ala	Pro	Leu	Thr	Leu	Ser	Asn	Gly	Phe	Leu	Cys
	450					455					460				
Ile	Glu	Asp	His	Ala	Gln	Leu	Thr	Val	Asn	Arg	Phe	Thr	Gln	Thr	Gly
465					470					475					480
Gly	Val	Val	Ser	Leu	Gly	Asn	Gly	Ala	Val	Leu	Ser	Cys	Tyr	Lys	Asn
				485					490						495
Gly	Ala	Gly	Asn												
			500												

<210> 23
 <211> 28
 <212> PRT
 <213> Chlamydia sp

<400> 23
 Ala Ala Ile Leu Ser Ser Thr Ala Val Leu Phe Gly Gln Asp Pro Leu
 1 5 10 15

Gly Glu Thr Ala Leu Leu Thr Lys Asn Pro Asn His
 20 25

<210> 24
 <211> 41
 <212> PRT
 <213> Chlamydia sp

<400> 24
 Val Leu Gly Asn Ser Tyr Cys Trp Phe Val Ser Lys Leu His Ile Thr
 1 5 10 15
 Asp Pro Lys Glu Ala Leu Phe Lys Glu Lys Gly Asp Leu Ser Ile Gln
 20 25 30
 Asn Phe Arg Phe Leu Ser Phe Thr Asp
 35 40

<210> 25
 <211> 76
 <212> PRT
 <213> Chlamydia sp

<400> 25
 Ile Ser Ala Asp Ala Phe Ser Leu Gln His Asn Tyr Leu Phe Thr Ala
 1 5 10 15
 Phe Glu Glu Asn Ser Ser Lys Gly Asn Gly Gly Ala Ile Gln Ala Gln
 20 25 30
 Thr Phe Ser Leu Ser Arg Asn Val Ser Pro Ile Ser Phe Ala Arg Asn
 35 40 45
 Arg Ala Asp Leu Asn Gly Gly Ala Ile Cys Cys Ser Asn Leu Ile Cys
 50 55 60
 Ser Gly Asn Val Asn Pro Leu Phe Phe Thr Gly Asn
 65 70 75

<210> 26
 <211> 41
 <212> PRT
 <213> Chlamydia sp

<400> 26
 Ala Cys Asn Gln Glu Thr Leu Phe Ala Ser Asn Ser Ala Lys Glu Lys
 1 5 10 15
 Gly Gly Ala Ile Tyr Ala Lys His Met Val Leu Arg Tyr Asn Gly Pro
 20 25 30
 Val Ser Phe Ile Asn Asn Ser Ala Lys
 35 40

<210> 27
 <211> 86
 <212> PRT
 <213> Chlamydia sp

<400> 27
 Leu Gln Ala Ser Val Thr Ser Pro Thr Pro Ala Thr Ala Ser Pro Leu
 1 5 10 15
 Val Ile Gln Thr Ser Ala Asn Arg Ser Val Ile Phe Ser Ser Glu Arg
 20 25 30
 Leu Ser Glu Glu Lys Thr Pro Asp Asn Leu Thr Ser Gln Leu Gln
 35 40 45

Gln Pro Ile Glu Leu Lys Ser Gly Arg Leu Val Leu Lys Asp Arg Ala
 50 55 60
 Val Leu Ser Ala Pro Ser Leu Ser Gln Asp Pro Gln Ala Leu Leu Ile
 65 70 75 80
 Met Glu Ala Gly Thr Ser
 85

<210> 28
 <211> 56
 <212> PRT
 <213> Chlamydia sp

<400> 28
 Glu Arg Leu Ser Glu Glu Glu Lys Thr Pro Asp Asn Leu Thr Ser Gln
 1 5 10 15
 Leu Gln Gln Pro Ile Glu Leu Lys Ser Gly Arg Leu Val Leu Lys Asp
 20 25 30
 Arg Ala Val Leu Ser Ala Pro Ser Leu Ser Gln Asp Pro Gln Ala Leu
 35 40 45
 Leu Ile Met Glu Ala Gly Thr Ser
 50 55

<210> 29
 <211> 51
 <212> PRT
 <213> Chlamydia sp

<400> 29
 Pro Leu His Ser Leu Asp Thr Glu Lys Ser Val Thr Ile His Ala Pro
 1 5 10 15
 Asn Leu Ser Ile Gln Lys Ile Phe Leu Ser Asn Ser Gly Asp Glu Asn
 20 25 30
 Phe Tyr Glu Asn Val Glu Leu Leu Ser Lys Glu Gln Asn Asn Ile Pro
 35 40 45
 Leu Leu Thr
 50

<210> 30
 <211> 56
 <212> PRT
 <213> Chlamydia sp

<400> 30
 Ser Asn Leu Phe Tyr Ala His Asp Ser Ser Gly Lys Pro Ile Asp Asn
 1 5 10 15
 Trp His His Arg Ser Leu Gly Tyr Leu Phe Gly Ile Ser Thr His Ser
 20 25 30
 Leu Asp Asp His Ser Phe Cys Leu Ala Ala Gly Gln Leu Leu Gly Lys
 35 40 45
 Ser Ser Asp Ser Phe Ile Thr Ser
 50 55

<210> 31
 <211> 66
 <212> PRT
 <213> Chlamydia sp

<400> 31

Ser Phe Ser Lys Glu Gly Phe Gly Ser Trp His Ser Val Ala Val Ser
 1 5 10 15
 Gly Glu Val Cys Ala Ser Ile Pro Ile Val Ser Asn Gly Ser Gly Leu
 20 25 30
 Phe Ser Ser Phe Ser Ile Phe Ser Lys Leu Gln Gly Phe Ser Gly Thr
 35 40 45
 Gln Asp Gly Phe Glu Glu Ser Ser Gly Glu Ile Arg Ser Phe Ser Ala
 50 55 60
 Ser Ser
 65

<210> 32
 <211> 61
 <212> PRT
 <213> Chlamydia sp

<400> 32
 Ser Gly Glu Ile Arg Ser Phe Ser Ala Ser Ser Phe Arg Asn Ile Ser
 1 5 10 15
 Leu Pro Ile Gly Ile Thr Phe Glu Lys Lys Ser Gln Lys Thr Arg Thr
 20 25 30
 Tyr Tyr Tyr Phe Leu Gly Ala Tyr Ile Gln Asp Leu Lys Arg Asp Val
 35 40 45
 Glu Ser Gly Pro Val Val Leu Leu Lys Asn Ala Val Ser
 50 55 60

<210> 33
 <211> 31
 <212> PRT
 <213> Chlamydia sp

<400> 33
 Met Ala Asn Leu Asp Ser Arg Ala Tyr Met Phe Arg Leu Thr Asn Gln
 1 5 10 15
 Arg Ala Leu His Arg Leu Gln Thr Leu Leu Asn Val Ser Cys Val
 20 25 30

<210> 34
 <211> 500
 <212> PRT
 <213> Chlamydia sp

<400> 34
 Met Arg Pro Asp His Met Asn Phe Cys Cys Leu Cys Ala Ala Ile Leu
 1 5 10 15
 Ser Ser Thr Ala Val Leu Phe Gly Gln Asp Pro Leu Gly Glu Thr Ala
 20 25 30
 Leu Leu Thr Lys Asn Pro Asn His Val Val Cys Thr Phe Phe Glu Asp
 35 40 45
 Cys Thr Met Glu Ser Leu Phe Pro Ala Leu Cys Ala His Ala Ser Gln
 50 55 60
 Asp Asp Pro Leu Tyr Val Leu Gly Asn Ser Tyr Cys Trp Phe Val Ser
 65 70 75 80
 Lys Leu His Ile Thr Asp Pro Lys Glu Ala Leu Phe Lys Glu Lys Gly
 85 90 95
 Asp Leu Ser Ile Gln Asn Phe Arg Phe Leu Ser Phe Thr Asp Cys Ser
 100 105 110

Ser	Lys	Glu	Ser	Ser	Pro	Ser	Ile	Ile	His	Gln	Lys	Asn	Gly	Gln	Leu
		115					120					125			
Ser	Leu	Arg	Asn	Asn	Gly	Ser	Met	Ser	Phe	Cys	Arg	Asn	His	Ala	Glu
	130				135						140				
Gly	Ser	Gly	Gly	Ala	Ile	Ser	Ala	Asp	Ala	Phe	Ser	Leu	Gln	His	Asn
145					150					155					160
Tyr	Leu	Phe	Thr	Ala	Phe	Glu	Glu	Asn	Ser	Ser	Lys	Gly	Asn	Gly	Gly
				165				170						175	
Ala	Ile	Gln	Ala	Gln	Thr	Phe	Ser	Leu	Ser	Arg	Asn	Val	Ser	Pro	Ile
			180					185					190		
Ser	Phe	Ala	Arg	Asn	Arg	Ala	Asp	Leu	Asn	Gly	Gly	Ala	Ile	Cys	Cys
	195					200						205			
Ser	Asn	Leu	Ile	Cys	Ser	Gly	Asn	Val	Asn	Pro	Leu	Phe	Phe	Thr	Gly
	210					215					220				
Asn	Ser	Ala	Thr	Asn	Gly	Gly	Ala	Ile	Cys	Cys	Ile	Ser	Asp	Leu	Asn
225					230					235					240
Thr	Ser	Glu	Lys	Gly	Ser	Leu	Ser	Leu	Ala	Cys	Asn	Gln	Glu	Thr	Leu
				245					250					255	
Phe	Ala	Ser	Asn	Ser	Ala	Lys	Glu	Lys	Gly	Gly	Ala	Ile	Tyr	Ala	Lys
			260					265					270		
His	Met	Val	Leu	Arg	Tyr	Asn	Gly	Pro	Val	Ser	Phe	Ile	Asn	Asn	Ser
		275				280						285			
Ala	Lys	Ile	Gly	Gly	Ala	Ile	Ala	Ile	Gln	Ser	Gly	Gly	Ser	Leu	Ser
	290					295					300				
Ile	Leu	Ala	Gly	Glu	Gly	Ser	Val	Leu	Phe	Gln	Asn	Asn	Ser	Gln	Arg
305					310					315					320
Thr	Ser	Asp	Gln	Gly	Leu	Val	Arg	Asn	Ala	Ile	Tyr	Leu	Glu	Lys	Asp
				325					330					335	
Ala	Ile	Leu	Ser	Ser	Leu	Glu	Ala	Arg	Asn	Gly	Asp	Ile	Leu	Phe	Phe
			340					345					350		
Asp	Pro	Ile	Val	Gln	Glu	Ser	Ser	Ser	Lys	Glu	Ser	Pro	Leu	Pro	Ser
		355					360					365			
Ser	Leu	Gln	Ala	Ser	Val	Thr	Ser	Pro	Thr	Pro	Ala	Thr	Ala	Ser	Pro
	370					375					380				
Leu	Val	Ile	Gln	Thr	Ser	Ala	Asn	Arg	Ser	Val	Ile	Phe	Ser	Ser	Glu
385					390					395					400
Arg	Leu	Ser	Glu	Glu	Glu	Lys	Thr	Pro	Asp	Asn	Leu	Thr	Ser	Gln	Leu
				405					410					415	
Gln	Gln	Pro	Ile	Glu	Leu	Lys	Ser	Gly	Arg	Leu	Val	Leu	Lys	Asp	Arg
			420					425					430		
Ala	Val	Leu	Ser	Ala	Pro	Ser	Leu	Ser	Gln	Asp	Pro	Gln	Ala	Leu	Leu
		435					440					445			
Ile	Met	Glu	Ala	Gly	Thr	Ser	Leu	Lys	Thr	Ser	Ser	Asp	Leu	Lys	Leu
	450					455					460				
Ala	Thr	Leu	Ser	Ile	Pro	Leu	His	Ser	Leu	Asp	Thr	Glu	Lys	Ser	Val
465					470					475					480
Thr	Ile	His	Ala	Pro	Asn	Leu	Ser	Ile	Gln	Lys	Ile	Phe	Leu	Ser	Asn
				485					490					495	
Ser	Gly	Asp	Glu												
			500												

<210> 35
 <211> 10
 <212> PRT
 <213> Chlamydia sp

 <400> 35

Val Pro Asp Pro Thr Lys Glu Ser Leu Ser
1 5 10

<210> 36
<211> 126
<212> DNA
<213> Chlamydia sp

<400> 36
tcaggactag ctagagaggt tccttctaga atctttctta tgcccaactc agttccagat 60
cctacgaaag agtcgctatc aaataaaaatt agtttgacag gagacactca caatctcact 120
aactgc 126

<210> 37
<211> 321
<212> DNA
<213> Chlamydia sp

<400> 37
tcaggactag ctagagaggt tccttctaga atctttctta tgcccaactc agttccagat 60
cctacgaaag agtcgctatc aaataaaaatt agtttgacag gagacactca caatctcact 120
aactgctatc tcgataacct acgctacata ctggctattc tacaaaaaac tcccaatgaa 180
ggagctgctg tcacaataac agattaccta agcttttttg atacacaaaa agaaggtatt 240
tattttgcaa aaaatctcac ccctgaaagt ggtggtgcga ttggttatgc gagtcccaat 300
tctcctaccg tggagattcg t 321

<210> 38
<211> 243
<212> DNA
<213> Chlamydia sp

<400> 38
agtttgacag gagacactca caatctcact aactgctatc tcgataacct acgctacata 60
ctggctattc tacaaaaaac tcccaatgaa ggagctgctg tcacaataac agattaccta 120
agcttttttg atacacaaaa agaaggtatt tattttgcaa aaaatctcac ccctgaaagt 180
ggtggtgcga ttggttatgc gagtcccaat tctcctaccg tggagattcg tgatacaata 240
ggt 243

<210> 39
<211> 198
<212> DNA
<213> Chlamydia sp

<400> 39
ggtcctgtaa tctttgaaaa taataacttgt tgcagaccat ttacatcgag taatcctaata 60
gcagctgtta ataaaaataag agaaggcgga gccattcatg ctcaaaatct ttacataaat 120
cataatcatg atgtggtcgg atttatgaag aacttttctt atgtccgagg aggagccatt 180
agtaccgcta ataccttt 198

<210> 40
<211> 201
<212> DNA
<213> Chlamydia sp

<400> 40
aatcagtcctt gttttctctt tatggacaac atctgtattc aaactaatac agcaggaaaa 60
ggtggcgcta tctatgctgg aacgagcaat tcttttgaga gtaataactg cgatctcttc 120
tttatcaata acgcctgttg tgcaggagga gcatctctt cccctatctg ttctctaaca 180

ggaaatcgtg gtaacatcgt t

201

<210> 41
<211> 276
<212> DNA
<213> Chlamydia sp

<400> 41
tcttcagaag cttctgatgg aggagcaatt aaagtaacta ctcgcctaga tgttacaggc 60
aatcgtggta ggatcttttt tagtgacaat atcacaaaaa attatggcgg agctattttac 120
gtcctctgtag ttaccctagt ggataatggc cctacctact ttataaacia tatecgcaat 180
aataaggggg gcgctatcta tatagacgga accagcaact ccaaaaatttc tgccgaccgc 240
catgctatta tttttaatga aaatattgtg actaat 276

<210> 42
<211> 198
<212> DNA
<213> Chlamydia sp

<400> 42
acgtcagcta atcctcctag aagaaatgca ataacagtag caagctcctc tgggtgaaatt 60
ctattaggag cagggagtag ccaaaaattta attttttatg atcctattga agtttagcaat 120
gcaggggtct ctgtgtcctt caataaggaa gctgatcaaa caggctctgt agtattttca 180
ggagctactg ttaattct 198

<210> 43
<211> 153
<212> DNA
<213> Chlamydia sp

<400> 43
tctgcagatt ttcattcaacg caattttacaa acaaaaaacac ctgcaccctt tactctcagt 60
aatgggttttc tatgtatcga agatcatgct cagcttacag tgaatcgatt cacacaaact 120
gggggtgttg tttctcttgg gaatggagca gtt 153

<210> 44
<211> 198
<212> DNA
<213> Chlamydia sp

<400> 44
gagattcctt tattgtgggt agagcctaca aataacagca ataactatac agcagatact 60
gcagctacct tttcattaag tgatgtaaaa ctctcactca ttgatgacta tgggaattct 120
ccttatgaat ccacagatct aacctatgct ctgtcatcac agcctatgct atctatttct 180
gaggctagtg ataaccag 198

<210> 45
<211> 108
<212> DNA
<213> Chlamydia sp

<400> 45
cagctaagat ctgatgatat ggatttttctg ggactaaatg tccctcatta tggatggcaa 60
ggactttgga cttggggctg ggcaaaaact caagatccag aaccagca 108

<210> 46
<211> 108
<212> DNA

<213> Chlamydia sp

<400> 46

ggctgggcaa aaactcaaga tccagaacca gcatcttcag caacaatcac agatccacaa	60
aaagccaata gattccatag aaccttatta ctgacttggc ttcctgct	108

<210> 47

<211> 228

<212> DNA

<213> Chlamydia sp

<400> 47

gcatcttcag caacaatcac agatccacaa aaagccaata gattccatag aaccttatta	60
ctgacttggc ttcctgctgg gtatgttcct agcccgaac acagaagtcc cctcatagcg	120
aataccttat gggggaatat gctgcttgca acagaaagct taaaaaatag tgcagaactg	180
acacctagt atcatccttt ctggggaatt acaggaggag gactaggc	228

<210> 48

<211> 228

<212> DNA

<213> Chlamydia sp

<400> 48

atgatagcag ggcagacaca caccttctca ttgaaattca gtcagaccta caccaaactc	60
aatgagcgtt acgcaaaaaa caacgtatct tctaaaaatt actcatgccca aggagaaatg	120
ctcttctcat tgcaagaagg tttcttgctg actaaattag ttgggcttta cagctatgga	180
gaccataact gtcaccattt ctatacccaa ggagaaaatc taacatct	228

<210> 49

<211> 63

<212> DNA

<213> Chlamydia sp

<400> 49

tctaaaaatt actcatgccca aggagaaatg ctcttctcat tgcaagaagg tttcttgctg	60
act	63

<210> 50

<211> 183

<212> DNA

<213> Chlamydia sp

<400> 50

gaccataact gtcaccattt ctatacccaa ggagaaaatc taacatctca agggacgttc	60
cgtagtcaaa cgatgggagg tgctgttttt tttgatctcc ctatgaaacc ctttggatca	120
acgcatatac tgacagctcc ctttttaggt gctcttggtta tttattctag cctgtctcac	180
ttt	183

<210> 51

<211> 153

<212> DNA

<213> Chlamydia sp

<400> 51

tttgatctcc ctatgaaacc ctttggatca acgcatatac tgacagctcc ctttttaggt	60
gctcttggtta tttattctag cctgtctcac tttactgagg tgggagccta tccgcgaagc	120
ttttctacaa agactccttt gatcaatgtc cta	153

<210> 52
 <211> 93
 <212> DNA
 <213> Chlamydia sp

<400> 52
 atgaaaaaag cgtttttctt tttccttatt ggaaactccc tatcaggact agctagagag 60
 gttccttcta gaatctttct tatgccaac tca 93

<210> 53
 <211> 1500
 <212> DNA
 <213> Chlamydia sp

<400> 53
 atgaaaaaag cgtttttctt tttccttatt ggaaactccc tatcaggact agctagagag 60
 gttccttcta gaatctttct tatgccaac tcagttccag atcctacgaa agagtcgcta 120
 tcaaataaaa ttagtttgac aggagacact cacaatctca ctaactgcta tctcgataac 180
 ctacgctaca tactggctat tctacaaaaa actcccaatg aaggagctgc tgtcacaata 240
 acagattacc taagcttttt tgatacacia aaagaaggta tttattttgc aaaaaatctc 300
 acccctgaaa gtggtggtgc gattgggtat gcgagtccca attctcctac cgtggagatt 360
 cgtgatacaa taggtcctgt aatctttgaa aataatactt gttgcagacc atttacatcg 420
 agtaatccta atgcagctgt taataaaata agagaaggcg gagccattca tgcacaaaat 480
 ctttacataa atcataatca tgatgtggtc ggatttatga agaacttttc ttatgtccga 540
 ggaggagcca ttagtaccgc taataccttt gttgtgagcg agaatacagtc ttgttttctc 600
 tttatggaca acatctgtat tcaaactaat acagcaggaa aagggtggcg tatctatgct 660
 ggaacgagca attcttttga gagtaataac tgcgatctct tctttatcaa taacgcctgt 720
 tgtgcaggag gagcgatctt ctcctctatc tgttctctaa caggaaatcg tggtaacatc 780
 gttttctata acaatcgctg ctttaaaaaat gtagaaacag cttcttcaga agcttctgat 840
 ggaggagcaa ttaaagtaac tactcgctta gatgttacag gcaatcgtgg taggatcttt 900
 tttagtgaac atatcacaaa aaattatggc ggagctattt acgctcctgt agttacccta 960
 gtggataatg gccctaccta ctttataaac aatatcgcca ataataaggg gggcgctatc 1020
 tatatagacg gaaccagcaa ctccaaaatt tctgccgacc gccatgctat ttttttaac 1080
 gaaaatattg tgactaatgt aactaatgca aatggtacca gtacgtcagc taatcctcct 1140
 agaagaaatg caataacagt agcaagctcc tctggtgaaa ttctattagg agcagggagt 1200
 agccaaaatt taatttttta tgatcctatt gaagttagca atgcaggggt ctctgtgtcc 1260
 ttcaataagg aagctgatca aacaggctct gtagtatttt caggagctac tgtaattct 1320
 gcagattttc atcaacgcaa tttacaaaca aaaacacctg cacccttac tctcagtaat 1380
 gggttttctat gtatcgaaga tcatgctcag cttacagtga atcgattcac acaaactggg 1440
 ggtgtgtgtt ctcttgggaa tggagcagtt ctgagttgct ataaaaatgg tgcaggaat 1500

<210> 54
 <211> 84
 <212> DNA
 <213> Chlamydia sp

<400> 54
 gctgctatatt tgtcatccac agcgggtcctc tttggccagg atcccttagg tgaaaccgcc 60
 ctccctcacta aaaatcctaa tcac 84

<210> 55
 <211> 123
 <212> DNA
 <213> Chlamydia sp

<400> 55
 gtacttgga attcctactg ttggttcgta tctaaactcc atatcacgga ccccaaagag 60
 gctcttttta aagaaaaagg agatctttcc attcaaaact ttcgcttcct ttccttcaca 120

gat

123

<210> 56
<211> 228
<212> DNA
<213> Chlamydia sp

<400> 56
atctctgcgg atgccttttc tctacagcac aactatcttt tcacagcttt tgaagagaat 60
tcttctaaag gaaatggcgg agccattcag gctcaaacct tctctttatc tagaaatgtg 120
tcgcctatatt ctttcgcccc taatcgtgcg gatttaaagt gcggcgctat ttgctgtagt 180
aatcttatatt gttcagggaa tgtaaaccct ctctttttca ctggaaac 228

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<213> Chlamydia sp

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<212> DNA
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<212> DNA

<213> Chlamydia sp

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<211> 183

<212> DNA

<213> Chlamydia sp

<400> 63

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<211> 93

<212> DNA

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<400> 64

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<212> DNA

<213> Chlamydia sp

<400> 65

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